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AUTHOR Balajthy, Ernest; Reuber, Kristin; Damon, Corrine J.
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ABSTRACT

A study investigated software choices of graduate-level clinicians in a university reading clinic to determine computer use and effectiveness in literacy instruction. The clinic involved students of varying ability, ages 7-12, using 24 Power Macintosh computers equipped with "ClarisWorks," "Kid Pix," "Student Writing Center," and "Netscape Navigator" software. Computer lab observations, examination of clinicians' lesson plans, and software evaluation forms showed that for computerized instruction: (1) follow-through was a lower priority; (2) time-on-task was less targeted; (3) computers were sometimes chosen for motivational value only; (4) software was used for drill and practice word recognition instruction, word processing, electronic books, Internet, and one-on-one interaction; and (5) hardware use resulted in frustrations because of unfamiliarity and availability issues. Findings suggest: teachers were moderately technically competent, were eager to use computers, and needed more time to familiarize themselves and plan; skill and grade level of software needed to be pinpointed with a corresponding list; and motivational stimulation regarding computers should be carefully determined. (Contains 11 references and 2 figures of data; an appendix lists 61 software titles available at the clinic.) (EF)

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Using Computers for Intervention and Remediation of Severely Reading-Impaired Children in a University Literacy Clinic

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Dr. Ernest Balajthy, SUNY-Geneseo

Kristin Reuber, North Street School, Geneva School District, NY

Corrine J. Damon, SUNY-Geneseo

Contact:

State University of New York at Geneseo

School of Education

Geneseo, NY 14454

(o) 716-245-5254

(fax) 716-245-5220

(e-mail) balajthy@geneseo.edu

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Using Computers for Intervention and Remediation of Severely Reading-Impaired Children in a University Literacy Clinic

Why should teachers use computers with disabled readers? A wide variety of reasons have been offered, but relatively few have been based on concrete research with that target population.

For one, the computer can have positive motivational influences on struggling readers. In their 1987 study, Roth and Beck found that the game-like format of their Hint and Hunt and Construct-A-Word programs had positive motivational effects on students. Instead of less motivating teacher-directed instruction in decoding skills, or workbook practice, the game-like format allowed for engagement and set up a challenging environment for the students.

McCormick's (1994) case study of a nonreader postulated that motivation is instrumental to reading achievement. She stated that, especially with students who have experienced recurring reading failure, intervention should be structured to be highly motivating and novel. The computer can provide such novel motivation.

Another reason for choosing computer-based interventions with less skilled readers has to do with the amount of time-on-task necessary for positive learning effects. Independent computer instruction allows for more time-on-task than traditional methods. Roth and Beck (1987), for

example, saw positive effects at the word and subword level after 14 hours of computer-based practice over a 12-week period. Jones, Torgesen and Sexton (1987) found substantial increases in both speed and accuracy of decoding after 10 weeks of daily 15-minute sessions of computer-based instruction. They also found that this improvement in decoding individual words led to improvements in reading connected text. After eight weeks of instruction, Torgesen, Waters, Cohen and Torgesen (1988) found that significant improvements in accuracy and speed of word identification was made using their WORDS program with 17 learning disabled children in first through third grades.

A third reason for computer-based interventions has to do with the corrective feedback feature of computer programs. Recent improvements in computer software have resulted in highly intelligible and natural-sounding voice feedback. Van Daal and van der Leij (1992) found that such speech feedback effectively aided learning disabled students in confirming the accuracy of their decoding attempts. It also aided in sound blending practice.

Wise and Olson (1994) also gave evidence for the efficacy of speech feedback components in computer programs. They asserted that computers have the ability to respond to a student's individual interests and instructional needs, while at the same time providing help anonymously and neutrally. They found that training with computerized

speech feedback for spelling attempts led to benefits in decoding skills.

Also, Wise (1992) used corrective feedback in a study using a voice synthesis system in which whole words, syllabic units, subsyllabic units, and single grapheme-phoneme units were used in word learning. The computer voice synthesizer pronounced the words or word segments while highlighting the matching text elements on the monitor. Wise found that poor readers made about twice the gains in word recognition and decoding skills as those in control groups receiving regular classroom or traditional remedial reading instruction.

A fourth research-based reason for using computers with reading disabled children has to do with the nature of electronic text (as opposed to traditional paper-based text) and with the benefits computer presentation of text has to offer (McKenna, Reinking, Labbo, & Kieffer, 1999,. Disabled readers can perform repeated readings of electronic text supported by computerized speech, on-line glossaries, graphics, and note-taking capabilities. Reading disabled youngsters can be taught to effectively take advantage of such resources to adopt learning strategies that lead to success in school tasks (Horney & Anderson-Inman, 1999).

The Study

The purpose of this study was to investigate the software choices made by graduate-level clinicians in a university summer reading clinic.

In the summer of 1997, 37 graduate students at the end of their master's degree program in reading and literacy education took a required clinical course entitled "EDUC 513: Practicum in Reading Instruction." The students were divided into two sections (morning and afternoon) and each was assigned a child for whom it was the clinician's responsibility to plan and provide instruction in literacy for 90 minutes per day, four days a week, over a five week period. As part of their responsibilities, clinicians were to examine existing information on the children's personal and educational background, carry out a detailed assessment, and finally write a case study.

Clinicians were required to write a daily lesson plan outlining their objectives and plans. They were supervised by a reading professor, who also led class discussions during a one hour per day time period in which the clinicians met as a group. The course requirement was that the clinician plan a balanced curriculum, which made use of both holistic activities and attention to development of reading and writing skills. While the clinicians were given a great deal of freedom to choose their own instructional strategies, the focus of most previous courses in the graduate program had been on helping children acquire literacy through meaningful, rich literacy experiences. Unified, collaborative experiences were encouraged by the requirement that small groups of teacher/student teams choose a high-interest unit topic around which reading and writing

tasks could be carried out. Topics included foreign countries, sports, and animals.

Clinicians were required to make some use of computers during their instructional time, though they were left to choose how extensively to use them. Prior to the clinic, few of the clinicians (if any) had a graduate course in educational use of computers. They were, however, generally familiar with use of computers. On the day prior to the opening of the clinic, the clinicians were introduced to the School of Education Computer Lab and to the software available for use with the children. They were given a two-hour supervised time block in which to try out the software and familiarize themselves with the lab's operation. Clinicians could also sign out software materials for use during the evenings.

The lab consisted of twenty-four Power Macintosh computers, all of which had installed versions of ClarisWorks (Claris), Kid Pix (Broderbund), and Student Writing Center (Learning Company), as well as Internet access using Netscape Navigator (Netscape). The lab was equipped with a laser printer. During part of each clinic session, a lab monitor was available to help with use of the computers and software. At a different site across the hall, students could have access to a color printer and to a scanner. In addition, two Apple IIGS computers and four older monochrome Macintosh computers were available in the Reading and Literacy Clinic rooms.

A wide variety of reading-related software was available (see

Appendix A). Clinicians could also use their own personal software or borrow software from a collection at the college library.

The children were all remedial readers of varying ability. They ranged in age from 7 to 12, and from grades 2 (that is, just finished first grade) to 7. They had been accepted from a pool of applicants on the basis of needs indicated in the applications, which had been completed by parents and teachers. Almost all had very severe difficulties in acquiring literacy and were well below their peers in reading achievement.

Collection of Data

Data was collected in two ways. First, the researcher made frequent observations at the computer lab and examined clinicians' lesson plans for use of computers. Second, at the end of the summer clinic, the clinicians filled out brief evaluation forms which asked them to identify each piece of software used and to write a brief purpose, description and evaluation statement.

Results

Use of the computers.

During the course of the clinic, the 37 clinicians used a total of 104 computer programs, an average of 2.8 programs each (see Figure 1). 22 different programs were used (see Figure 2). Some of these were parts of

a series. For example, the drill and practice Reader Rabbit series consisted of Reader Rabbit I (15 uses), Reader Rabbit II (11 uses) and Reader Rabbit III (1 use). The Phonics Prime Time series for the Apple II computer had several disks, each of which focused on different phonics skills.

Many of the clinicians made far more use of the computers than was minimally required for the course. 18 used four or more computer programs. Actual time spent on the programs varied from a minimum of about 30 minutes for an electronic book or an Internet session to three or four hours over a two week period on a series of word processing projects or a complex simulation curriculum such as Africa Trail (MECC). Drill and practice sessions tended to be short, about 15 or 20 minutes. No one established a regular drill and practice regimen over a period of more than several days.

Purposes for using computers.

Observation indicated that the clinicians appeared to be less intent on carrying out activities that they thought would result in concrete achievement gains when using computers. In non-technology teaching situations, clinicians were spending the majority of their time in two ways. First, they were involving children in meaning-oriented reading and writing activities that provided the children with time-on-task: Journaling, researching and writing reports on topics of high motivational

value to individual students, and reading high interest children's picture books or novels. Second, they were targeting direct instruction to reading and writing skills identified by ongoing diagnosis as needs: Word identification (especially sight word development, synthetic phonics instruction, word families, and structural analysis--through both drill and practice activities and language experience activities) and fluency development (as in choral reading and echo reading activities) were two common instructional components.

From observation of classroom time and from examination of lesson plans, it was apparent to the researcher that computer time was less targeted than non-technology teaching time. Clinicians often had no written objectives for the time they devoted to the computer. They were not able to explain their purpose in using the software, other than vaguely "for sight word recognition" or "for phonics instruction." With traditional instructional time, for example, the clinicians could specifically identify the sight words to be learned (e.g., those taken from a picture book or novel being read) and the specific phonics skills to be learned (e.g., the short "e").

This lack of specificity appeared to have three causes. First, much of the software use was not well-planned. Clinicians would explore the Internet with their children for information on a particular sport, for example. But they had not previously explored and chosen effective

websites. Clinicians would choose a particular program for word recognition development at the child's approximate reading level, but they had not examined it previously closely enough to identify the specific skills being addressed nor to ascertain where those skills fit into the tutorial curriculum.

Second, much of the computer use was chosen more for the experience in using literacy on the computer than for the achievement of specific objectives. For example, one clinician using Kid Pix for a combined drawing/language experience activity, wrote that she used it "for relaxation and fun." Journaling using word processing, for example, could have been done just as well on paper. Word searches and hangman games could have been done on paper, as well. Use of the computer appeared to be occurring more for general enrichment of the clinical experience than for targeting areas of literacy need.

Third, some of the computer use was designed simply for motivational value. Much of the motivational need depended on the individual child. As those familiar with clinical situations will know, motivation in a university clinic setting is commonly not much of a problem. The children are highly motivated simply by the rare opportunity to have the undivided attention of a caring adult. The clinician further motivates by choosing activities that will appeal to the child, such as choosing books that are on topics of greatest interest to the child or

creating skill drill and practice games that appeal to the child (such as sight word baseball or vocabulary football). The major motivational issue facing most clinicians has more to do with encouraging a long-lasting love of reading and writing that will go beyond the clinical situation.

Yet, there are always children who need additional motivation even beyond this. Here is where clinicians often tried to use computers to encourage and interest their students. Their interest was less in trying to make gains in achievement and more in simply trying to establish a more positive overall attitude on the part of the students. In some cases, use of the computer lab was directly tied as a reward to cooperative hard work in more objective-oriented, traditional instruction.

Motivation.

Clinicians almost unanimously noted the high motivation children had to use computers. Danny, for example, was a second grade child who had initially been very reluctant to attend the clinic. He would cry and hold on to his mom when she tried to drop him off at the clinic. His clinician was very concerned that he would drop out. Computer use, and a patient, caring clinician, helped turn the corner. He would ask to use the computer every day.

On the other hand, it was clear that motivation was quite idiosyncratic. A program that would be enthusiastically received by one student (Danny loved the Reader Rabbit (Edmark) series.) would not work

as well with another student (Travis would quickly be bored by Reader Rabbit. But Hangman, a simple, public domain program that lacked sound color, and sophisticated graphics was rated for Travis as, "Worked great! Was an excellent motivator."). In general, it was noted both in the clinicians' questionnaires and in observations by the researcher that the drill and practice programs were motivating for relatively brief periods (usually 10 to 15 minutes per session).

Drill and practice word recognition instruction.

The largest category of software use was for word recognition instruction using drill and practice software. 46 of the 104 software choices were in this category. The clinic had two major word recognition series available, an older MECC series (Phonics Prime Time and Words at Work) designed for the Apple II and the newer Reader Rabbit series. The latter was by far the more popular (26 uses as compared to 3 for the older MECC series). Also, the Pacman-like Word Munchers (Learning Company) program was used by 8 clinicians.

As mentioned above, observation of computer use by the researcher indicated that clinicians commonly had not sufficiently examined software to specifically identify relevant target skills. For example, often clinicians would simply sit with their child and explore the use of Reader Rabbit for the first time, figuring out how to load the program and what the directions were as they went along. After observing this,

clinicians were warned by the clinic director that more preparation was necessary, but with all the demands on their time, it was apparent that such warnings were not always heeded. Also, many clinicians felt so confident in their computer ability that they did not see the need to study the program's operation prior to using it with their children.

However, by the end of the clinic sessions, at the point where the clinicians filled out questionnaires on their computer use, they had become familiar enough with the software that they were able to describe their use of the drill and practice materials with reference to quite specific skills: For example, medial short vowels (Reader Rabbit 2), consonant blends (Reader Rabbit 2), sight words (Reader Rabbit 1), and word families (Reader Rabbit 1). While the high motivating power of these programs was often mentioned, only a few clinicians specifically stated that they thought that their children's knowledge had increased as a result of their use (for example, with vowel sounds using Reader Rabbit 1 or with blends and diphthongs using Phonics Prime Time by MECC).

Word processing

Word processing was used by 23 of the 37 clinicians. Observations at the clinic indicated that the actual amount of use of word processing software, in terms of minutes and hours, may have made this category of software even more important than indicated by the tally. Clinicians often made quite extensive use of the word processing. Several older

monochrome Macintosh computers with dot matrix printers were readily available near the clinic tutorial stations, and clinicians would frequently spend time at them with the children, typing journals, practicing spelling, or writing stories. Clinicians would also make use of the computers after the clinic sessions, to type and print out a language experience story or a story which the children had written by hand.

One surprising finding was that Student Writing Center, used for creating classroom newspapers, was not used at all by the clinicians, despite its being installed on the hard drive of each lab computer. The program is frequently used by local schools, as it is often supplied free-of-charge with hardware purchases, so it would be expected that clinicians would be knowledgeable about it. It may have been that clinicians were not as aware of its availability as they were of the software that was in CD-ROM format, stored in colorful boxes on the lab shelves. However, it had been demonstrated during the pre-clinic introductory session in the computer lab. It may also be that the limited number of graphics supplied in the version available may have not been useful to the clinicians' needs. Also, the classroom newspaper format may not be as useful in a tutorial situation: The ClarisWorks word processor apparently served the needs of the teachers and students.

Clinicians noted that the children learned to use the word processing program readily, though typing was inevitably quite slow. (One child

convinced her mother that she should buy a keyboarding tutorial program for their home computer.) Some noted that use of the word processor worked well in motivating the children to write. One, who was trying to encourage writing through use of invented spelling, also suggested that her child "was slightly more willing to take risks with words and their spelling on the computer than when he physically wrote words on paper."

In regards to the slow typing, one clinician made use of the slow pace of hunt-and-peck typing to guide her student in thinking through letter-sound relationships. Another clinician suggested that word processing "alleviated the frustration of letter formation in writing" for her second grade child. Still yet another, whose child wrote daily penpal letters to another child in the clinic, liked the legibility of word processed letters, as the child's handwriting was difficult to read. The benefit of word processing over handwriting for these children was mentioned by several clinicians.

Another clinician used ClarisWorks to have his child type the sight word lists she was studying. He suggested that the very act of typing was a valuable part of the sight word learning experience, and that the child enjoyed the task. Two clinicians used the spelling checker to correct spelling, though one found that misspellings were so serious that the checker could not suggest correct alternatives, which was frustrating for the child.

Electronic books

Another surprising finding was the limited use of electronic books by the clinicians. These books are widely available. Balajthy (1996) reported that some 265 electronic books were available for children in 1995 and that that number was growing by 33% per year. Observations during the initial introduction of the computer lab and the software collection to the clinicians had shown that clinicians were very enthusiastic about the entertaining electronic books that were available.

In the end, however, only 9 uses of electronic books were indicated. It may be that clinicians believed that too much off-task behavior resulted from use of the books, as children used point-and-click game activities that would take away from learning time. It may also be that the clinicians did not see use of the books as a valuable use of their tutorial time. That is, they may have concluded that electronic books are more for independent use by students than for tutorial settings. Clinicians gave the rather vague objectives of reading Arthur's Teacher Trouble (Living Books) as "for enjoyment and interaction with a story" and of reading Ruff's Bone (Living Books) as "to have fun with reading." It was apparent that the program played no central part in the instructional plans for their children.

Electronic books are often criticized by educators as

"edutainment"--with more emphasis on the entertainment components than on the educational. One clinician concurred in her assessment of the use of the Aladdin and Lion King Storybooks (Disney): "Students LOVED these; literacy activities are 'tucked in'...but not designed to be a 'teaching' tool; more for a fun 'computer literacy' experience."

Yet, the final questionnaires indicated a good deal of enthusiasm on the part of those who chose to use the electronic books. One wrote that Just Grandma and Me (Living Books) was "highly entertaining and appropriate language ability" for his child, who was a fifth grader reading at a low third grade level.

Internet use

Still yet another unexpected finding was the limited use of the Internet. Only 12 clinicians made use of Netscape Navigator for Internet access. This may be a factor of the time of the study. In 1997, teachers were less familiar with educational use of the Internet. There were fewer websites available specifically designed for children. In fact, the School of Education had only recently (4 months before) connected its computer lab to the Internet, though other sites on campus did have access. It may well be that far more clinicians would choose to use the Internet resources today.

Use of the Internet in this clinical setting may have been slightly discouraged by difficulties due to hardware. The recently installed

computers did not yet have an appropriate amount of RAM, and Netscape Navigator would occasionally fail to function appropriately. This was especially a problem unless the clinician quit all other programs which might have been running on the computer. Some clinicians seemed confused by the idea that more than one program could be running at a time.

Another problem mentioned by clinicians had to do with the children's ability to read Internet material, a challenge pointed out by Balajthy, 1997, in a column article on advantages and challenges presented to reading teachers by the Internet. Many children were reading at levels far below those needed for success with typical Internet material, even that designed specifically for children. One clinician noted that children need both help in recognizing what information to read (i.e., selecting relevant material; one child was confused by the ubiquitous advertisements) and also "a lot" of help in the actual reading task. For the most part, clinicians with older children (fourth to seventh grade) were more likely to use the Internet.

In general, however, clinicians who did use the Internet were enthusiastic about its use. "When working, it's great!" one wrote on her questionnaire form. The major use of the Internet was in researching high interest topics such as sports, foreign countries, and sharks. Quite a number of children also visited http://www.Disney.com for activities and

readings related to Disney films and television shows.

One-on-one instruction with the computer

In using the Pacman-like Word Munchers (Learning Company) with Dan, a third grader, the clinician noted that, "I modified [the program's use] for Dan and told him which words to munch. Otherwise this program would have been too difficulty for him. (He had to think of the [target] word, say the words with the same sounds, eat them, while trying to get away from the monster.)" The clinician identified her objective as teaching word identification based on auditory perception, rather than the game's actual objective of medial vowel drill and practice.

This modification of the original software objective, carried out in a situation in which a tutor is working one-on-one with the child at the computer, was very typical of computer use in the clinic. The researcher observed no occasion in which a tutor sent a child to work independently on a computer. In fact, tutor input during the computer use was very substantial. Clinicians guided the children in software use, explaining the directions. But more importantly, the clinicians actively modified the software tasks and objectives to meet the individual needs and abilities of the children.

Hardware

Three important observations arose dealing with the issue of hardware. First, clinicians and children universally strongly preferred the

late model Power Macintosh computers over older Apple IIGS and monochrome Macintosh models. The Reading and Literacy Clinic had a very wide selection of software for the Apple IIGS computers, and both those models and monochrome Macintosh computers were readily available in the clinic. In the end, it was apparent that they were simply taking up space, and plans are to remove almost all of them in the near future.

Second, hardware problems actively discourage use of computers to an extent that may be surprising to experienced computer users, who are accustomed to frustrations. This was apparent with the Internet access difficulties described above. As the clinic progressed and difficulties became apparent that discouraged the clinicians from spending time on the computers, the clinic director attempted to alleviate some of the difficulties. A college networking program forced clinicians to save their texts on floppy disks, as computer shutdown would automatically erase anything saved on the hard drive. It became apparent that clinicians either could not remember to save on floppies or were confused about the procedure. As a result, the networking program was disabled to help alleviate the confusion. At the clinic, one of the dot matrix printers was balky. (The chooser had to be reset every time the computer was restarted). The director first posted a detailed note next to it, explaining how problems could be avoided. But after repeated frustrations, the printer was replaced. Also, some computers at the clinic had printers and

others did not. Clinicians would sit at a computer to do word processing with their children, not noticing that the particular computer had no printer. Saving to floppy disk and transporting the disk to a computer with a printer was a challenge to some of the clinicians. Eventually, the word processing software was deleted from the hard drives of computers without printers.

Third, ready availability of hardware and software is a critical factor. The clinicians had access to over 100 software programs (beyond those available at the clinic) in the college library, a 10-minute walk from the clinic. Except for one instance, none of these programs was used. The clinicians also had access to a scanner and a color printer, at a site several rooms away from the computer lab and on a separate network. The scanner was never used and the color printer was only used once.

Conclusions

1. Teachers are very willing to use computers for instructional purposes, and their technological competence in using them is moderately high.

2. Teachers need support to become much more familiar with the commercial software of potential use to them. It takes a significant amount of time to examine a new piece of software, understand its operation and educational purpose, and plan for its use with particular

children.

3. Teachers need support in planning systematic computer instructional time so as to have children on-task in critical skill areas.

4. Teachers would benefit from availability of a list of software that effectively addresses key skills at each grade level. In all probability, the best source of such a list would be its construction by teams of teachers at each school.

5. Software needs to be examined specifically to identify skill objectives and whether or not those skill objectives can be met.

6. Computers are powerful motivational tools for some students. However, teachers need to be careful about using computers as external reinforcing gimmicks for motivation. Lifelong motivation to learn to read comes from success at the task and from recognizing its meaningfulness.

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Figure 1: Computer use per clinician

Used 6 programs: 2 clinicians (5%)

Used 5 programs: 4 clinicians (11%)

Used 4 programs: 12 clinicians (33%)

Used 3 programs: 8 clinicians (22%)

Used 2 programs: 9 clinicians (24%)

Used 1 programs: 2 clinicians (2%)

Figure 2: Tabulation of Computer Use

Drill and Practice Word Recognition Instruction

- Reader Rabbit Series (27)
- Word Munchers (8)
- Word Search (Public Domain) (3)
- Hangman (Public Domain) (4)
- MECC Phonics Prime Time Series (Apple II) (3)
- Reading Maze (1)

Word Processing

- ClarisWorks (22)
- Microsoft Works (1)

Research

- Netscape Navigator (12)
- Grolier's Encyclopedia (1)

Electronic Books

- Aladdin Storybook (1)
- Lion King Storybook (2)
- Just Grandma and Me (1)

Arthur's Teacher Trouble (2)

Ruff's Bone (1)

Harry and the Haunted House (1)

Jack Prelutsky Poems (1)

General Early Literacy

Bailey's Book House (7)

Graphics Applications

Print Shop (3)

Kid Pix (1)

Simulations

Africa Trail (1)

Oregon Trail (1)

Total Programs Used: 104

Appendix A: Reading and Literacy Center Software

SUNY Geneseo April, 1999

(Items marked with an asterisk (*) were available in 1997 for the present study.

SOE Computer Lab, South Hall

Reader Rabbit 1*
Reader Rabbit 2*
Reader Rabbit 3*
Reader Rabbit Interactive Journey*
Reader Rabbit Storybook I
Reader Rabbit Storybook II
Reader Rabbit Storybook III
Reader Rabbit Storybook IV
Winnie the Pooh Storybook*
Aladdin Activity Center*
Lion King Storybook*
Lion King Activity Center*
Arthur's Teacher Trouble*
Just Grandma and Me*
Hercules Storybook
Write On! Writing With LIT
Easybook Deluxe
Toy Story Activity Disk
Mega Munchers*
Reading Blaster: Vocabulary
American Girls Premiere
Magic School Bus: Human Body
SIM Classics*
Bailey's Book House*
The Backyard*
Storybook Theater*
Write On! Plus: Middle School
Cultural Reporter*
Arthur's Reading Race*
Berenstain Bears Collection
Reading Blast & Vocab
Missing Links
Reading Blaster: Ages 6-9
Reading Blaster: Ages 9-12

Crossword Studio*

Magic School Bus: Explores Oceans*

Super Solvers Spell Bound

Africa Trek*

In My Own Voice*

Oregon Trail and Oregon Trail Writer*

Destination: Ocean

Lego Island

On hard drives in South Hall 244

Netscape Navigator*

Student Writing Center*

Kid Pix*

ClarisWorks*

Hyper Studio*

Amazon Trail

Math Blaster: Mystery

Sim Copter

Sim Earth

Ariel's Story Studio

Learn To Read Promenade Pre k

Old MacDonald Had a Farm

Learn To Read Promenade Gr. K

WiggleWorks selected disks*

Available in the Clinic

Word Search (Public Domain)*

Hangman (Public Domain)*

Phonics Prime Time (Apple II)*

Those Reading Machines (Apple II)*

Words at Work (Apple II)*